AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Currently Amended) Affinity sensor for detecting specific binding events in response to a sample medium, comprising:

a carrier substrate provided with at least two electrodes and having a predetermined area therebetween, said electrodes being equidistantly spaced apart from each other and engagingly bordering said area on opposing sides, at least said area ~~being adapted for receiving~~ having immobilized specific binding partners for affinity binding ~~coupling~~ complementarily associated binding partners directly or via further specific binding molecules[[,]] ; and

said area being accessible to said complementarily associated binding partners provided in [[a]] the sample medium and having a minimum width adapted for capture of at least one of said complementarily associated binding partners provided with one electrically conductive particle within said area by affinity binding with said immobilized specific binding partners to form ~~in such a way as to allow for formation of~~ a respective tunnel contact junction between the particle and the electrodes.

2. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, wherein said width is under 800 nm.

3. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, wherein the immobilized specific binding partners cover said area with a thickness which permits tunnel effects.

4. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, wherein the electrodes are each two micro-electrodes arranged in a pair, the electrodes being connected to an amplifier circuit with an associated measuring and evaluating unit so that an electric current flow across the area can be detected when there is a voltage applied across the electrodes.

5. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 4, wherein the electrodes are part of the amplifier circuit and project from out of the latter.

6. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 5, wherein the amplifier circuit is a component of a microchip.

7. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, wherein the electrodes are comb-like structures opposingly meshed, and said predetermined area includes affinity areas at least between respective opposing ones of said electrodes.

8. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 7, wherein the comb-like electrodes and the affinity areas are arranged on a common chip surface.

9. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 8, wherein the chip surface is formed by a silicon wafer.

10. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 8, wherein the chip surface is formed by a glass target.

11. (Currently Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 7, wherein the comb-like electrodes are arranged in geometrical symmetry to interdigital structures and said affinity areas are arranged in a matrix, the electrodes are separated from each other at intersections by an insulating layer arranged between the electrodes.

12. (Currently Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 7, wherein said electrodes are ~~micro-electrode~~ micro-electrodes and a length of the micro-electrodes is 0.1 mm, the width of the area is 0.1 μm and its effective height is 0.02 μm as well as the affinity areas is at a 1:10 ratio relative to the chip surface.

13. (Currently Amended) Affinity sensor for detecting specific molecular binding events as in claim 7, wherein in addition to the affinity areas at least one reference area is provided which carries inactive binding partner for a reference measurement instead of the specific binding partners.

14. (Currently Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 7, wherein [[the]] occupation ~~density~~

densities of the specific binding partners on the individual affinity areas [[is]] are different.

15. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 7, wherein the individual affinity areas carry different specific binding partners.

16. (Currently Amended) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, 13, 14 or 15, wherein a plurality of reference areas is provided [[being]] occupied with different inactive binding partners.

17. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, wherein the specific binding partners enter into chemical coordination.

18. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, wherein the specific binding partners are bioactive or biomimetic molecules.

19. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 17, wherein the specific binding partners are nucleic acids.

20. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 17, wherein the specific binding partners are proteins.

21. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 17, wherein the specific binding partners are saccharides.

22. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, wherein the conductive particles are of sizes in the range of 0.1 μm to 5 μm.

23. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, wherein the conductive particles are of sizes in the nanometer range.

24. (Previously Presented) Affinity sensor for detecting specific molecular binding events as claimed in claim 1, wherein the conductive particles consist of metal-cluster compounds.

25-36. (Canceled)